# NSEI SABLEFISH MARKING

# POT SURVEY CRUISE REPORT

*F/V MISS CONCEPTION*

JUNE 21–JULY 7, 2001

by

Beverly Richardson


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## INTRODUCTION

The Alaska Department of Fish and Game contracted the *F/V Miss Conception*, for the period of June 21–July 11, 2001, to conduct the second in a series of sablefish surveys using pot gear within the Northern Southeast Inside (NSEI) management area. The survey was conducted in the four major commercial fishery statistical areas in Chatham Strait between the latitudes of 56°10' N. and 58°00' N. (Figure 1). During the survey over 8,000 sablefish were captured, marked, and released. Fish were released in near proportion to the 2000 harvest and distributed as evenly as possible within each statistical area. This report describes the methods and preliminary results of this survey.

## OBJECTIVES

1. Mark a total of 8,000 sablefish.
   - Double mark 4,000 sablefish with an external "T-bar" tag at the base of the dorsal fin and with a clip on the outer 1/3 of the upper (dorsal) lobe of the caudal (tail) fin using a straight clip (Figure 2a).
   - Single mark 4,000 sablefish with a clip on the outer 1/3 of the lower (ventral) lobe of the caudal (tail) fin using a straight clip (Figure 2b).
2. Apportion the 8,000 marked sablefish according to the sample size distribution, shown in Table 1, among four statistical areas; in the portion of Statistical Area 345603 north of 56°10' N. latitude, and throughout Statistical Areas 345631, 345701, and 345731.

   To the extent possible, the number of double-marked and single-marked fish in each statistical area should be nearly equal, with approximately equal numbers of double-marked and single-marked fish released at each set.

   The purpose of apportioning the marked fish among the statistical areas is to distribute the marked fish approximately in proportion to the distribution of the commercial fishery catch in 2000. This apportionment is intended to promote adherence to catchability assumptions necessary to estimate abundance under mark-recapture theory.
3. Take fork lengths on all marked sablefish prior to release.

## METHODS

The survey was conducted aboard the *F/V Miss Conception*, a 79-foot, steel-hulled commercial fishing vessel that currently fishes sablefish with pots in the Bering Sea. The vessel was contracted for a 21-day vessel charter from Jim Miller of Concept Fisheries (phone 206-524-8410 and email milmanmon@aol.com) for $65,995. As part of the contract the vessel furnished the bait. Bruce Greenwood, a partner in the company and a part-time skipper of the *F/V Miss Conception*, skippered the vessel. The vessel provided four fishing crew in addition to the vessel's skipper. The scientific staff consisted of three ADF&G staff on each of the two legs of the survey (Table 2).

Within the constraint of attempting to distribute the marked fish uniformly throughout each statistical area, the skipper was given free reign to fish in a manner that would maximize the catch of sablefish. He made the sets in areas of potentially productive sablefish habitat. The vessel surveyed the area and checked bottom bathymetry prior to making sets.

The beginning and ending latitude and longitude, anchor times, number of pots per set, and depths where each pot went overboard was recorded for each set by ADF&G crew (Table 3). The catches were enumerated per set but not by individual pot. The distribution of the location of the sets between and among statistical areas is shown on the chart in Figure 3.

### *Gear*

The vessel operator provided sablefish pots and other gear necessary to longline the pots as required in the contract. The sablefish pots consisted of 80 5-foot and 6-foot conical sablefish pots (Figures 4 and 5) many of which were modified Southeast prawn pots, now illegal in the prawn fishery. The pots were designed, constructed, and webbed by the contractor. The pots were equipped with double offset tunnels.

Two strings of groundline, running line, and buoy line were stored on a slack-taking reel. On each string the groundline was configured with 40 beckets (Figure 6) spaced at 50 fm intervals. For the first three sets of this survey 20 pots per string were set with a spacing between pots of 100 fathoms (i.e., using every other becket). We then increased the number of pots from 20 per string to between 30 to 36 pots per string. The spacing between pots was either 50 or 100 fathoms depending on the number of pots set per string. By spacing the pots throughout the length of the groundline a set covered 2.1 miles regardless of the number of pots on the set.

The bid required the vessel operator to provide four strings of 20 pots each. In addition to the two strings on the slack-taking reel two more strings of line were stored in, and could be hauled directly into, the bait hold. We found we were able to cover the ground adequately and more expediently using only two strings so all setting and retrieving was done using the reel.

The level-wind on the slack-taking reel malfunctioned on July 2, 2001. Efforts to repair the level-wind were not successful. Gear was hauled by manually level-winding the reel for the remainder of the survey. The manual level-winding of the gear and the numerous attempts at repair did not slow down the operation, however, it did create additional work for the vessel crew. Due to a lack of deck space onboard the vessel we tried to keep only one string of pots on board at one time. This saved considerable time and effort for the vessel crew as they did not need to stack the pots so tightly. When we traveled great distances both strings of pots were stacked on board.

### *Sablefish Marking*

All healthy sablefish of at least 40 cm fork length were measured to the nearest centimeter, marked, and released. Sablefish smaller than 40 cm were released without marking due to concerns that these small fish might not be retained consistently by all vessels during the commercial fishery.

Marks consisted of either:

1. A green T-bar type tag and a clip on the upper lobe of the caudal fin (Figure 2a)
   or
2. A clip on the lower lobe of the caudal fin (Figure 2b)

Tag numbers 10,000 through 14,595 were used on this survey. Green plastic T-bar anchor tags from Hallprint in Australia were used.

Two marking stations were set up aboard the vessel to facilitate marking fish as rapidly as possible, minimize stress on the fish, and accomplish a 50/50 distribution of the two types of marked fish (Figure 6 through Figure 10). One station was set up on the edge of the hopper to measure and clip the lower lobe of the caudal fin of approximately half the fish. A cocoa mat was placed on the rollers on the hopper after the pot was removed and the measuring board was placed on this mat. There were two persons at this station: one (vessel crew) to catch and place the fish on the measuring board and another (ADF&G) to measure the fish and clip the lower lobe of the caudal fin. Length frequencies were marked directly onto the measuring board and transferred after the set to a data form. A second marking station was set up in an adjacent area where the remaining sablefish were measured, tagged, and the upper lobe of the caudal fin was clipped. At this station one (ADF&G) person recorded the tag number and length directly onto a data-form and clipped the upper lobe of the caudal fin of the fish, a second (ADF&G) person measured, tagged, and released the fish, and a third person (vessel crew) caught and placed the fish on the measuring board. Marking took place simultaneously at the two stations.

**Previously Tagged Sablefish**

Sablefish captured on this survey that had been tagged by ADF&G in previous years were re-tagged. The sablefish were measured, the old tag number was recorded, the old tag was left in place, the set location was noted, and the fish were then re-tagged with a 2001 tag. The upper caudal fin was then clipped and the fish was released. Sablefish captured that had been tagged previously by other agencies had their tags removed and the tags were returned to the marking agency along with the recovery data, including lengths and recovery locations. Sablefish that were recaptured that had been tagged or otherwise marked on this survey were re-released without being re-tagged.

### *Bycatch*

Bycatch was identified by species and recorded for each pot.

### *Comparative Longline Sets — F/V Ida June*

On June 23, 2001 the crew of the *F/V Ida June* made three longline sets in the same area of Statistical Area 345701 in which the *F/V Miss Conception* was concurrently fishing. This was done to compare the size distribution of sablefish caught with longline gear to the size distribution of the sablefish caught with pot gear in the same area at the same time of year.

No fish were marked on the longline sets. The sablefish were measured to the nearest cm. All sablefish and rockfish were retained and sold by the longline vessel in exchange for services. All other fish were tallied and released back into the water.

### *Data Management*

All field data, both set data and tag release data in addition to sablefish lengths, were entered while at sea between sets onto the Region 1 relational database Alexander (Alex). This was the first time a "field" version of Alex was available for data-entry. Data were entered with minimal problems. Data were uploaded in Juneau onto the Regional Alex database at the completion of the survey. The ability to enter data in the field, soon after the data were collected, provided for more accurate data and precluded several days worth of data-entry upon return from the survey. The survey data were further edited and summarized after completion of the survey.

### *Trip Log*

**Leg 1**

The crew of the *F/V Miss Conception* took on bait and ice at Norquest in Petersburg at 1000 hrs and left Petersburg at 1200 hrs on June 2, 2001. The first set was made just north of Pt. Gardner at 2100 hrs on June 2. A second set was in the water by 0030 hrs on June 3. The first several sets had 20 pots per string as outlined in the survey bid request. After the second day the number of pots per set was increased and two sets of 30–36 pots per string were set rather than the three sets per day of 20 pots each outlined in the bid. This was more efficient and still easily accomplished project goals. We continued to make two sets a day to the north until we reached the upper end of Statistical Area 345701 (June 25, 2001). We then headed to the southern end of the statistical area, made sets, and moved into Statistical Area 345631. An ADF&G crew change took place in Red Bluff Bay on the morning of July 28, 2001.

**Leg 2**

On June 29, 2001 we completed three sets, removed all sets from the water, and ran to Petersburg arriving at 0800 hrs on June 30. We took on bait and fresh water from Icicle Seafoods. One additional ADF&G staff member boarded in Petersburg. While in Petersburg ADF&G crew unloaded gear that would not be used on the remainder of the trip. We departed Petersburg at 1515 hrs on June 30 and returned to the survey area. We had one set in the water in Statistical Area 345603 by 0345 hrs on July 1. We set three sets that day to catch up with the original schedule.

In Statistical Area 345603 the survey was designed to catch, mark, and release sablefish only in the area above 56°10' N. latitude. This latitudinal limit was set to reduce the chance that substantial numbers of marked fish would move out of Chatham Strait. There was limited productive sablefish habitat in this area and we moved our efforts north without completing the marking goal for this statistical area.

On July 4 we moved back to the northern end of Statistical Area 345701, attained our target release for that area, and then moved to Statistical Area 345731. The last set was pulled on July 7. The *F/V Miss Conception* then proceeded to Juneau and docked at 1600 hrs on July 7. The survey was completed.

## RESULTS

Twenty-nine sets were made resulting in a total of 954 individual pots being set and retrieved. A total of 9,206 sablefish were captured by pot gear. Since the catches were enumerated per set and not by individual pot, per pot data is not available. The average number of sablefish captured per pot for a set ranged from one to 25 with the mean of the per set pot average being ten sablefish per pot. The minimum and maximum depths recorded for the ends of the sets were 145 and 440 fathoms respectively. The mean of the average depth per set was 344 fathoms. Soak time was measured from the first anchor overboard to the first anchor on board and ranged from seven hours 42 minutes to 24 hours and 45 minutes. The average soak time for a set was 16 hours and nine minutes (Table 3).

### *Sablefish Marking*

Of the 9,206 sablefish captured during the survey only 28 sablefish were determined to be in questionable condition and therefore not marked prior to release. Only one fish measured less than 40 cm (it was 37 cm) and therefore was released unmarked.

We exceeded our marking goals in three of the four statistical areas. In Statistical Area 345603 we fell far short of our goal (Table 4). Despite substantial effort in Statistical Area 345603, which included extending the southern boundary of the pot survey in this statistical area from 56°20’ N. latitude south to 56°10’ N. latitude we still had relatively low catches on most sets. Since catches were minimal we chose to discontinue this statistical area despite not meeting our marking goal. Marking goals in Statistical Area 345631 and 345701 were exceeded because of high catch rates on our last few sets. Despite exceeding our goals in Statistical Area 345731 we continued making sets as we headed north in order to achieve good coverage of the statistical area. However we did not set gear or mark any sablefish in the northern 20 percent of Statistical Area 345731 (above 57°49' N) as we had exceeded our marking goals to such a large extent.

The same approximate number of fish, in each statistical area, were marked with a tag and an upper caudal clip as were marked with only a lower caudal clip (Table 4).

Variations were noted on differing methods of clipping the caudal fin. With six different people clipping the tails throughout the survey the angle of the caudal clips varied from clips as described in the examples in the sampling protocol (Figures 2a and 2b) to angles of clips represented in Figure 11.

### Previously Tagged Sablefish

Forty-nine sablefish that had been tagged in previous years by ADF&G were captured in the pots. These fish were re-tagged with year 2001 ADF&G tags and the original tag was left in place. These previously tagged sablefish consisted of one 1997 release, four 1998 releases, seven 1999 releases and 37 2000 releases. In addition one 1999 Canadian release tagged sablefish and two NMFS Auke Bay tagged sablefish were recovered and these tags were returned to the appropriate tagging agency with recovery information.

### *Bycatch*

Bycatch was minimal. Dover sole was the primary bycatch. Thornyhead rockfish, halibut, and brown king crab were also captured in the pots. The bycatch is summarized in Table 5.

### *Length Frequency*

Of the 9,206 sablefish captured, fork lengths were recorded for 9,172. Lengths were not recorded for sablefish that were badly flea bitten or otherwise in too poor health to be marked. The sablefish ranged in length from 37 cm to 109 cm. The mean length was 58 cm and a mode was noted around 52 cm to 54 cm (Figure 12).

### *Comparative Longline Sets* — F/V Ida June

On June 23, 2001 the *F/V Ida June* made three longline sets in the same area of Statistical Area 345701 in which the *F/V Miss Conception* was fishing. Set locations and associated catches are listed in Table 6.

The *F/V Ida June* landed a total of 1,144 sablefish of which 1,087 were measured for fork length. The lengths on the longline captured sablefish ranged from a minimum of 40 cm to a maximum of 110 cm which is comparable to the range of lengths on the sablefish captured with pot gear at 37 cm to 109 cm. The mean length of the longline sablefish measured was 60 cm as compared to the mean length of 58 cm for sablefish captured with the pot gear. Two of the longline sets produced mostly small fish and the third set resulted in much larger fish overall. The longline gear showed a primary mode at 52 cm that was similar to the mode of the catches on the pot gear and a second smaller mode at 68 cm (Figure 12).

Table 1. Target number of fish to mark in each statistical area (total N=8,000).

| | Statistical Area | | | |
|---|---|---|---|---|
| | 345603 | 345631 | 345701 | 345731 |
| Target Sample > | 1,861 | 2,617 | 2,690 | 8,32 |

Table 2. Survey crew on the NSEI 2001 pot survey.

| Vessel Crew | ADF&G Staff, Leg 1 | ADF&G Staff, Leg 2 |
|---|---|---|
| Bruce Greenwood (Skipper) | Tory O'Connell | David Carlile |
| Nathan Brown | Deidra Holumn | Jeffrey Kelly |
| Jim Moore | Beverly Richardson | Beverly Richardson |
| Steve Custodio | | |
| Steve Newman | | |

Table 3. Pot set summary for NSEI sablefish survey, June 21 – August 7, 2001.

| Set no. | Start Latitude | Start Longitude | End Latitude | End Longitude | 2nd Anchor Over | First Anchor Onboard | Soak Time 2nd Anchor Over To 1st Anchor Onboard | No of Pots | Start Depth | End Depth | Average Depth | Total Sablefish | Average Sablefish/Pot/Set |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 57.0467 | -134.6525 | 57.0982 | -134.6825 | 6/21/01 20:20 | 6/22/01 9:25 | 13:05 | 19 | 277 | 326 | 326 | 314 | 17 |
| 2 | 57.1587 | -134.7203 | 57.2052 | -134.7738 | 6/22/01 0:15 | 6/22/01 15:00 | 14:45 | 20 | 364 | 325 | 344 | 384 | 19 |
| 3 | 57.1848 | -134.6683 | 57.2445 | -134.6833 | 6/22/01 13:52 | 6/23/01 9:30 | 19:38 | 20 | 145 | 215 | 258 | 132 | 7 |
| 4 | 57.2387 | -134.7448 | 57.2650 | -134.6950 | 6/22/01 19:19 | 6/23/01 15:37 | 20:18 | 30 | 365 | 402 | 427 | 276 | 9 |
| 5 | 57.2817 | -134.7333 | 57.3212 | -134.7617 | 6/23/01 14:22 | 6/24/01 10:15 | 19:53 | 30 | 440 | 340 | 406 | 162 | 5 |
| 6 | 57.3283 | -134.6733 | 57.3605 | -134.6667 | 6/23/01 20:45 | 6/24/01 16:30 | 19:45 | 35 | 365 | 342 | 335 | 334 | 10 |
| 7 | 57.3817 | -134.7450 | 57.4128 | -134.7800 | 6/24/01 15:32 | 6/25/01 8:05 | 16:33 | 34 | 288 | 285 | 341 | 170 | 5 |
| 8 | 57.3733 | -134.6655 | 57.3352 | -134.6500 | 6/24/01 20:05 | 6/25/01 12:15 | 16:10 | 35 | 338 | 290 | 318 | 327 | 9 |
| 9 | 57.0427 | -134.6842 | 57.0073 | -134.7112 | 6/25/01 18:10 | 6/26/01 9:40 | 15:30 | 35 | 360 | 334 | 353 | 284 | 8 |
| 10 | 56.9888 | -134.6705 | 56.9497 | -134.6948 | 6/25/01 20:00 | 6/26/01 14:35 | 18:35 | 35 | 325 | 345 | 336 | 269 | 8 |
| 11 | 56.8990 | -134.5878 | 56.9383 | -134.5990 | 6/26/01 14:05 | 6/27/01 9:40 | 19:35 | 35 | 367 | 322 | 351 | 159 | 5 |
| 12 | 56.8685 | -134.6053 | 56.8578 | -134.6617 | 6/26/01 19:05 | 6/27/01 15:25 | 20:20 | 35 | 375 | 361 | 372 | 279 | 8 |
| 13 | 56.7953 | -134.5737 | 56.7950 | -134.6283 | 6/27/01 14:14 | 6/28/01 9:45 | 19:31 | 34 | 400 | 398 | 394 | 550 | 16 |
| 14 | 56.8767 | -134.6225 | 56.8752 | -134.5705 | 6/27/01 19:00 | 6/28/01 15:45 | 20:45 | 36 | 363 | 373 | 370 | 401 | 11 |
| 15 | 56.7617 | -134.4667 | 56.7417 | -134.5117 | 6/28/01 14:30 | 6/29/01 8:10 | 17:40 | 34 | 295 | 317 | 340 | 155 | 5 |
| 16 | 56.6773 | -134.6130 | 56.6983 | -134.5667 | 6/28/01 21:30 | 6/29/01 13:42 | 16:12 | 36 | 194 | 378 | 375 | 524 | 15 |
| 17 | 56.6300 | -134.5467 | 56.6353 | -134.5953 | 6/29/01 11:28 | 6/29/01 19:20 | 7:52 | 34 | 357 | 347 | 353 | 387 | 11 |
| 18 | 56.4517 | -134.6002 | 56.4207 | -134.5757 | 7/1/01 3:46 | 7/1/01 13:00 | 9:14 | 35 | 179 | 324 | 314 | 286 | 8 |
| 19 | 56.4183 | -134.6200 | 56.3967 | -134.5700 | 7/1/01 5:35 | 7/1/01 19:35 | 14:00 | 35 | 253 | 339 | 315 | 186 | 5 |
| 20 | 56.3722 | -134.5082 | 56.3608 | -134.4510 | 7/1/01 18:30 | 7/2/01 19:15 | 24:45 | 35 | 242 | 401 | 372 | 123 | 4 |
| 21 | 56.3357 | -134.4993 | 56.3433 | -134.4717 | 7/2/01 0:25 | 7/3/01 1:00 | 24:35 | 34 | 349 | 396 | 397 | 420 | 12 |
| 22 | 56.4122 | -134.5692 | 56.4457 | -134.6067 | 7/2/01 23:00 | 7/3/01 10:30 | 11:30 | 35 | 332 | 315 | 324 | 318 | 9 |
| 23 | 56.3812 | -134.5667 | 56.3433 | -134.5417 | 7/3/01 7:25 | 7/3/01 17:40 | 10:15 | 34 | 313 | 362 | 353 | 31 | 1 |
| 24 | 56.4967 | -134.5375 | 56.4522 | -134.5258 | 7/3/01 15:40 | 7/4/01 7:30 | 15:50 | 35 | 306 | 305 | 336 | 58 | 2 |
| 25 | 57.4347 | -134.7253 | 57.4622 | -134.6733 | 7/4/01 18:12 | 7/5/01 8:15 | 14:03 | 35 | 320 | 273 | 300 | 886 | 25 |
| 26 | 57.4933 | -134.7950 | 57.5283 | -134.6917 | 7/4/01 21:25 | 7/5/01 17:00 | 19:35 | 34 | 378 | 315 | 370 | 198 | 6 |
| 27 | 57.7148 | -134.7635 | 57.7627 | -134.7885 | 7/5/01 14:30 | 7/6/01 15:15 | 24:45 | 35 | 308 | 296 | 286 | 626 | 18 |
| 28 | 57.6067 | -134.8333 | 57.6017 | -134.7717 | 7/5/01 21:15 | 7/6/01 9:15 | 12:00 | 35 | 320 | 313 | 318 | 273 | 8 |
| 29 | 57.7827 | -134.9045 | 57.8097 | -134.8448 | 7/6/01 14:14 | 7/7/01 7:40 | 17:26 | 35 | 209 | 299 | 286 | 694 | 20 |
| Grand Total | | | | | | | | 954 | | | | 9206 | 10 |

Table 4. Marks by statistical area.

Sablefish marked in the 2001 Sablefish Pot survey, June 21–July 7, 2001

| Statistical Area | Lower Clip Only | Tagged W/Upper Clip | Total Marked | Goal For Statistical Area |
|---|---|---|---|---|
| 345603 | 724 | 696 | 1,420 | 1,861 |
| 345631 | 1,343 | 1,365 | 2,708 | 2,617 |
| 345701 | 1,647 | 1,613 | 3,260 | 2,690 |
| 345731 | 910 | 878 | 1,788 | 832 |
| Grand Total | 4,624 | 4,552 | 9,176 | 8,000 |

Table 5. Numbers of species caught as bycatch in pot survey.

| Set | Sablefish | Dover Sole | Rex Sole | Thornyhead | Rougheye Rockfish | Shortraker Rockfish | Redbanded Rockfish | Halibut | Pacific Sleeper | Box Crab | Brown Kingcrab |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 314 | 6 | | | | | | | | | |
| 2 | 384 | 20 | 2 | | | | | | | | |
| 3 | 132 | 4 | | 1 | | | 3 | 3 | | | |
| 4 | 276 | 36 | | | | | | | | | 1 |
| 5 | 162 | 65 | | | | | | | | | |
| 6 | 334 | 45 | | | | | | | | | |
| 7 | 170 | 50 | | 8 | | | | | | | 2 |
| 8 | 327 | 21 | | | 1 | | | | | | 1 |
| 9 | 284 | 38 | | | 1 | | | | | | 17 |
| 10 | 269 | 66 | | | | | | 1 | | 1 | |
| 11 | 159 | 47 | | 1 | 1 | | 1 | 2 | | | |
| 12 | 279 | 74 | | 1 | | | | 1 | | | |
| 13 | 550 | 22 | | | | | | | | | |
| 14 | 401 | 111 | | | | | | 1 | | | |
| 15 | 155 | 23 | | | | | | | | | |
| 16 | 524 | 31 | | 2 | | | | 2 | | | |
| 17 | 387 | 15 | | | | | | | | | 1 |
| 18 | 286 | 10 | | 3 | | | | 3 | 1 | | |
| 19 | 186 | 2 | | 4 | 2 | 3 | | 7 | | | |
| 20 | 123 | 13 | | 3 | 4 | 1 | | | | | |
| 21 | 420 | 29 | | 3 | | | | 3 | | | |
| 22 | 318 | 2 | | 5 | 4 | 1 | | | | | |
| 23 | 31 | 14 | | 2 | | 4 | | 3 | 1 | | 1 |
| 24 | 58 | 12 | | 5 | 2 | | | 3 | | | 1 |
| 25 | 886 | 2 | | 1 | | | | | | | |
| 26 | 198 | 107 | | | 2 | | | 2 | | | |
| 27 | 626 | | | | | | | | | | |
| 28 | 273 | 26 | | 4 | | | | 1 | | | |
| 29 | 694 | 3 | | | 1 | | | 3 | | | |
| | | | | | | | | | | | |
| Total | 9206 | 894 | 2 | 43 | 18 | 9 | 4 | 35 | 2 | 1 | 24 |

Table 6. *F/V Ida June* longline sets for the 2001 NSEI pot survey comparison.

| Set | Statarea | Start Lat and Long | | End Lat and Long | | Anchor Over | Soak Hrs | Avg fm | Total Hooks | Total Sable | Sablefish/ Hk |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 345701 | 57 11.52 | 134 45.6 | 57 9.75 | 134 45.21 | 6/23/01 6:05 | 4:07 | 333 | 1514 | 661 | 0.44 |
| 2 | 345701 | 57 8.79 | 134 41.5 | 57 7.00 | 134 40.62 | 6/23/01 6:54 | 7:53 | 327 | 1756 | 274 | 0.16 |
| 3 | 345701 | 57 16.17 | 134 40.0 | 57 17.38 | 134 40.29 | 6/23/01 12:55 | 4:41 | 279 | 1456 | 209 | 0.14 |

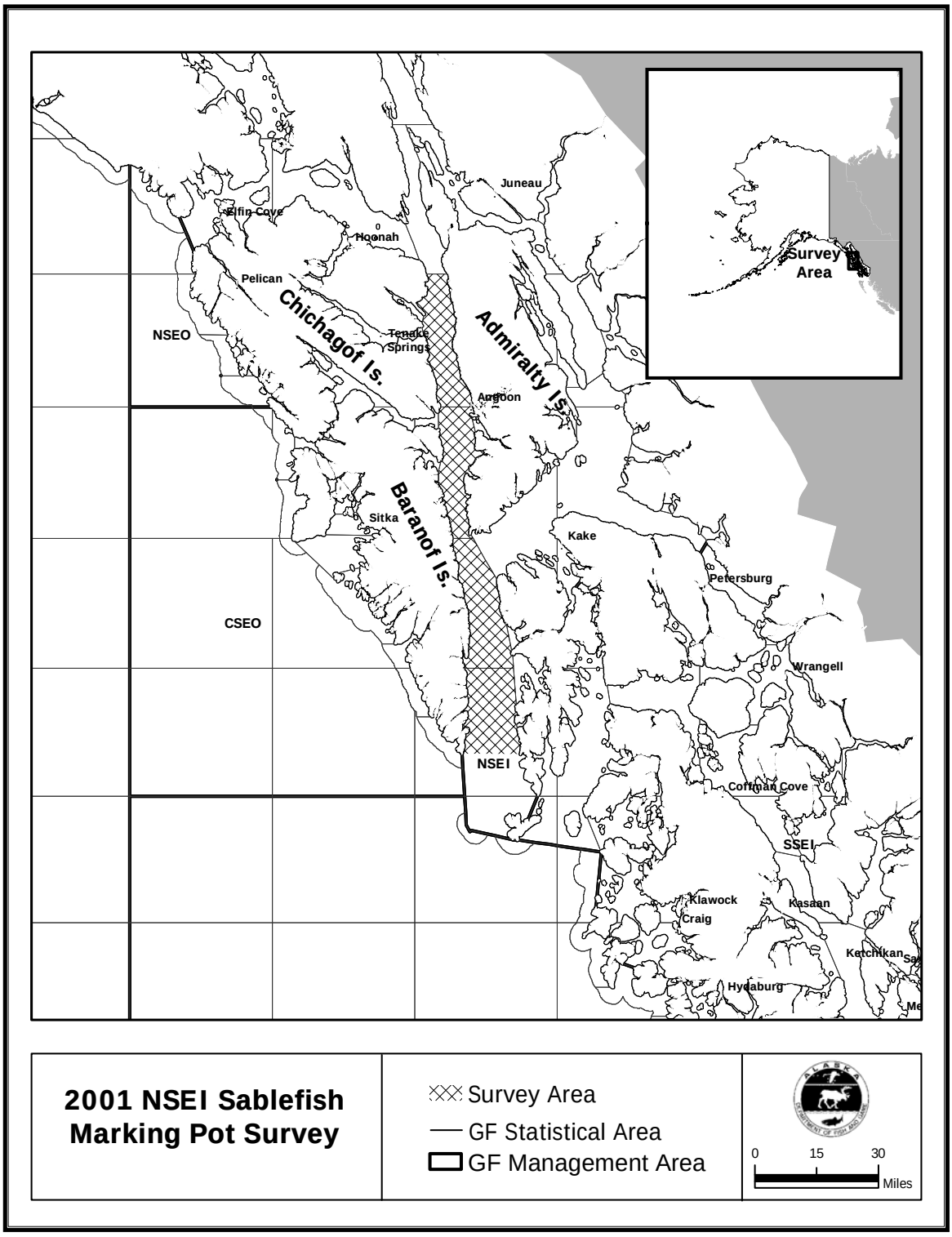
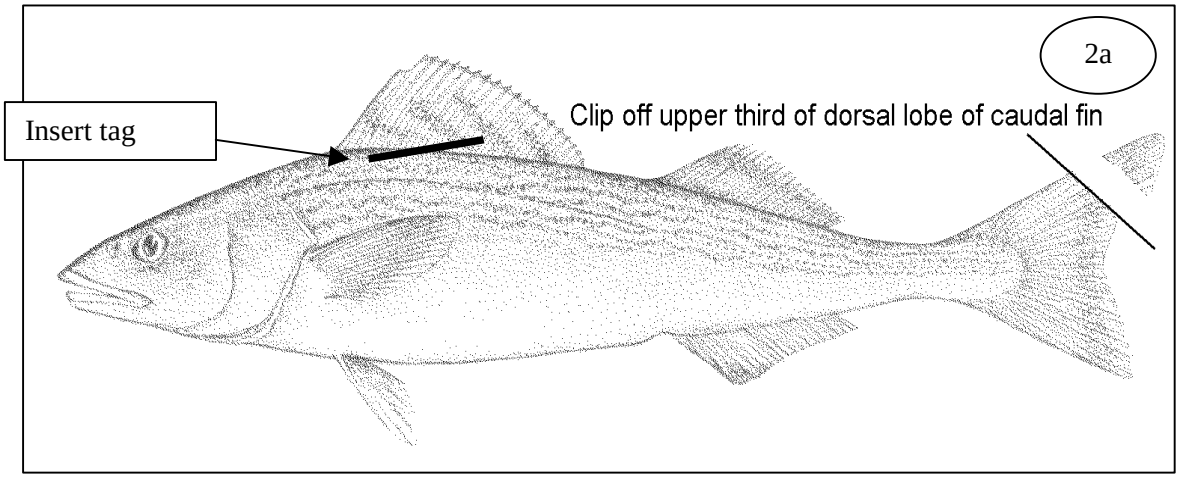



Figure 1. Sablefish survey area.



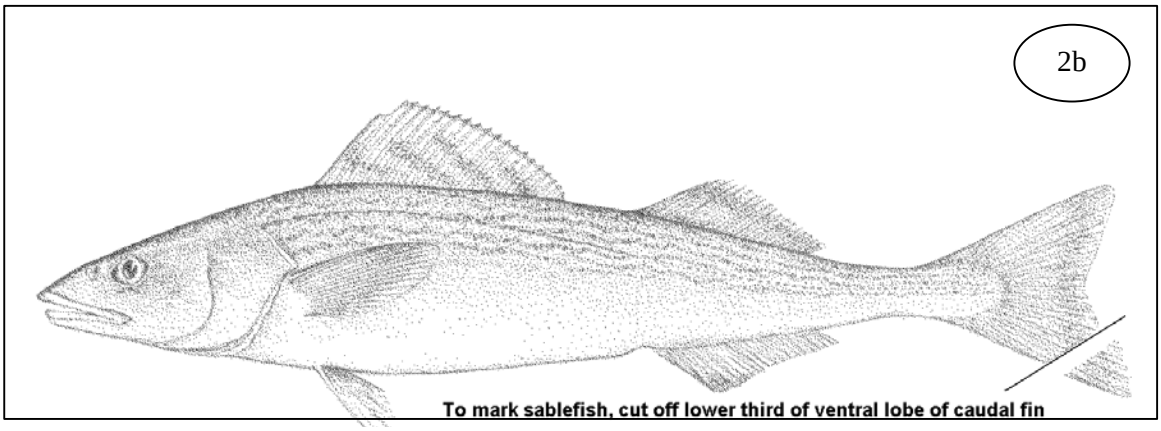




Figure 2. Sablefish marking types for the 2001 pot survey in NSEI.

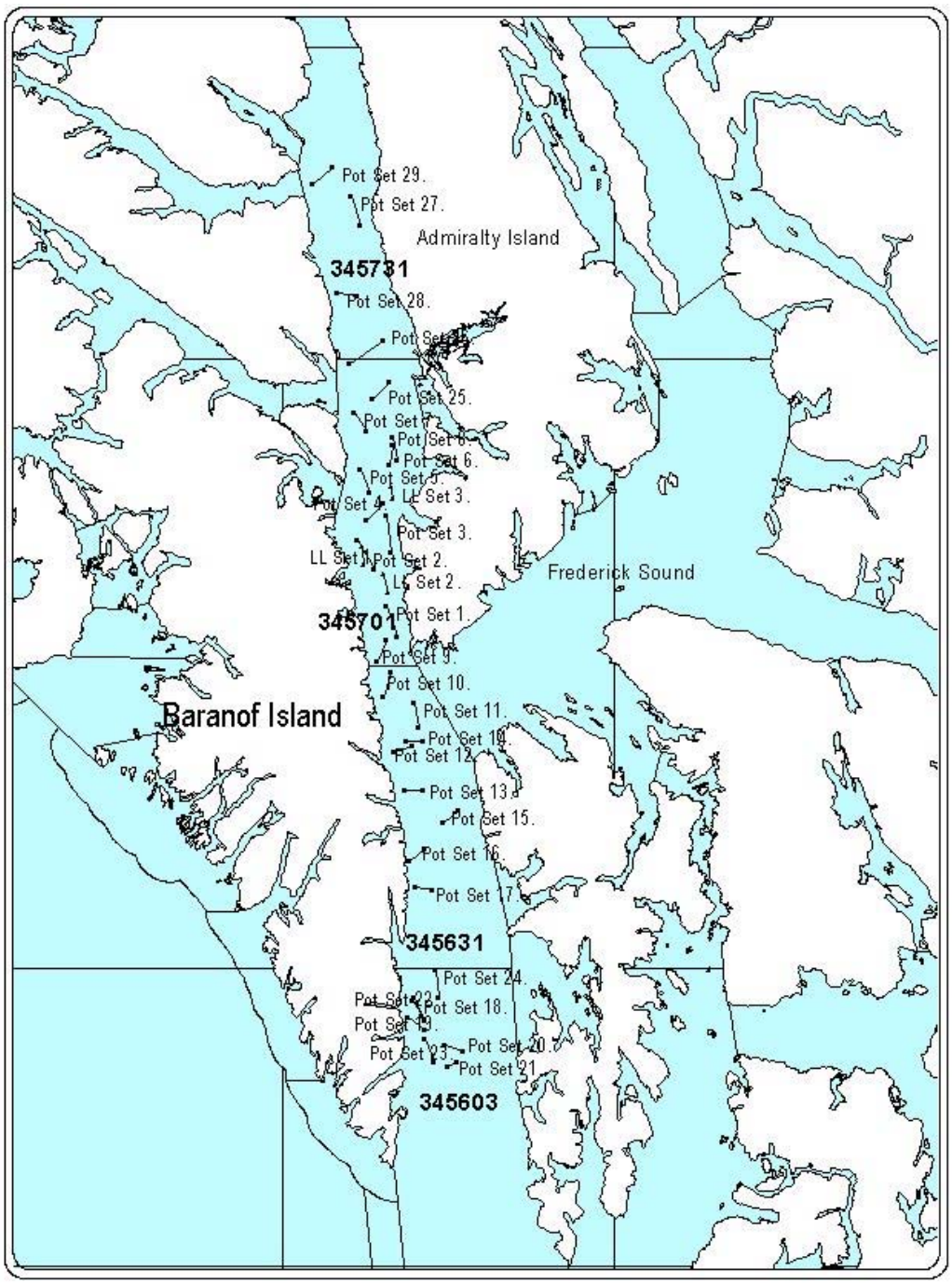



Figure 3. NSEI pot survey set locations, 2001. LL sets are comparison longline sets.

The following photos were taken by Tory O'Connell and Beverly Richardson during the 2001 NSEI pot survey.

Figure 4. Five-foot sablefish pots.

Figure 5. Six-foot sablefish pots.

Figure 6. Hooking pots onto the beckets on longline.

Figure 7. Tagging and clipping upper lobe of caudal fin.

Figure 8. Marking area showing both marking stations.

Figure 9. Sablefish pot being brought onboard.

Figure 10. Sablefish pot being placed onto hopper.

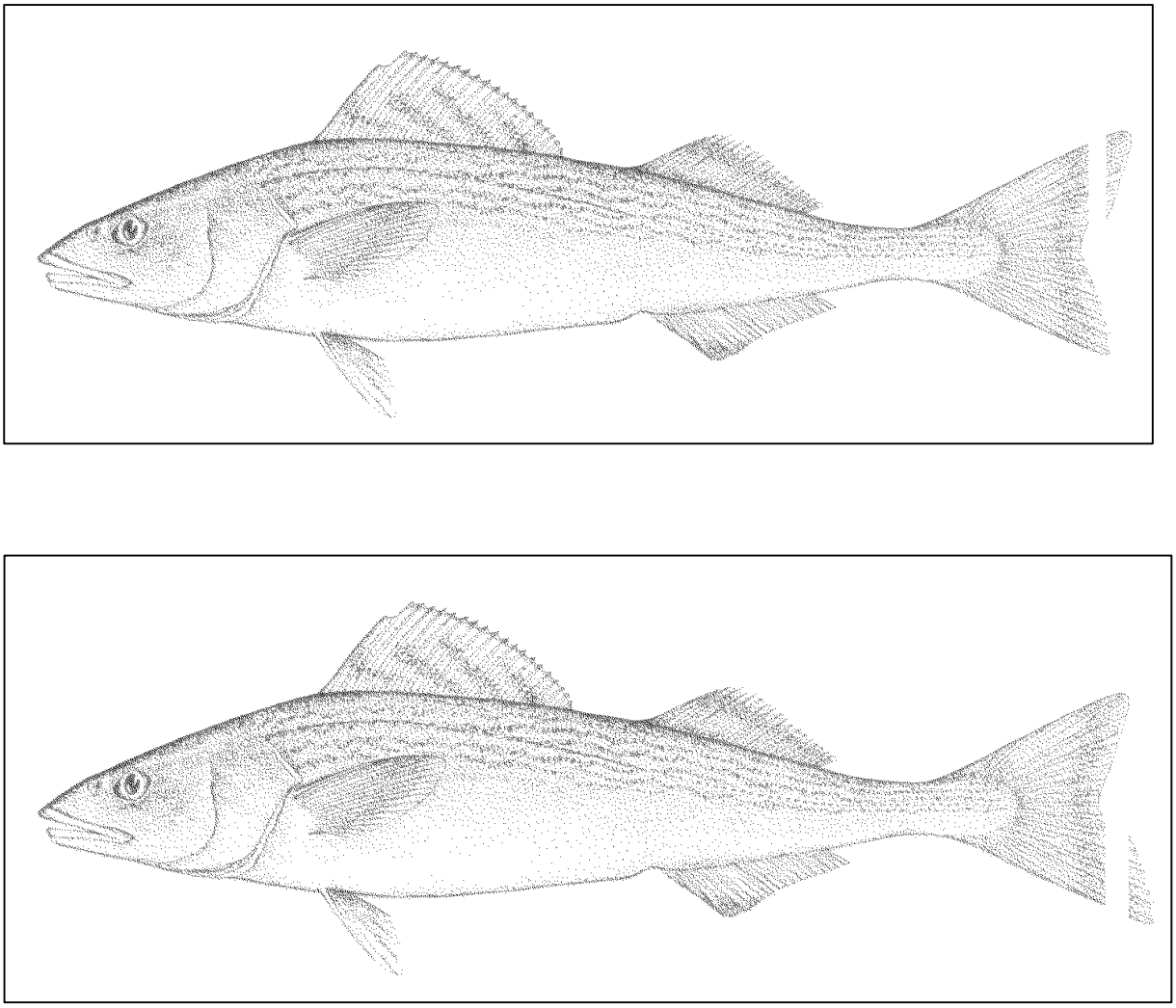


Figure 11. Alternate angles of tail clips performed during the 2001 NSEI sablefish pot survey.

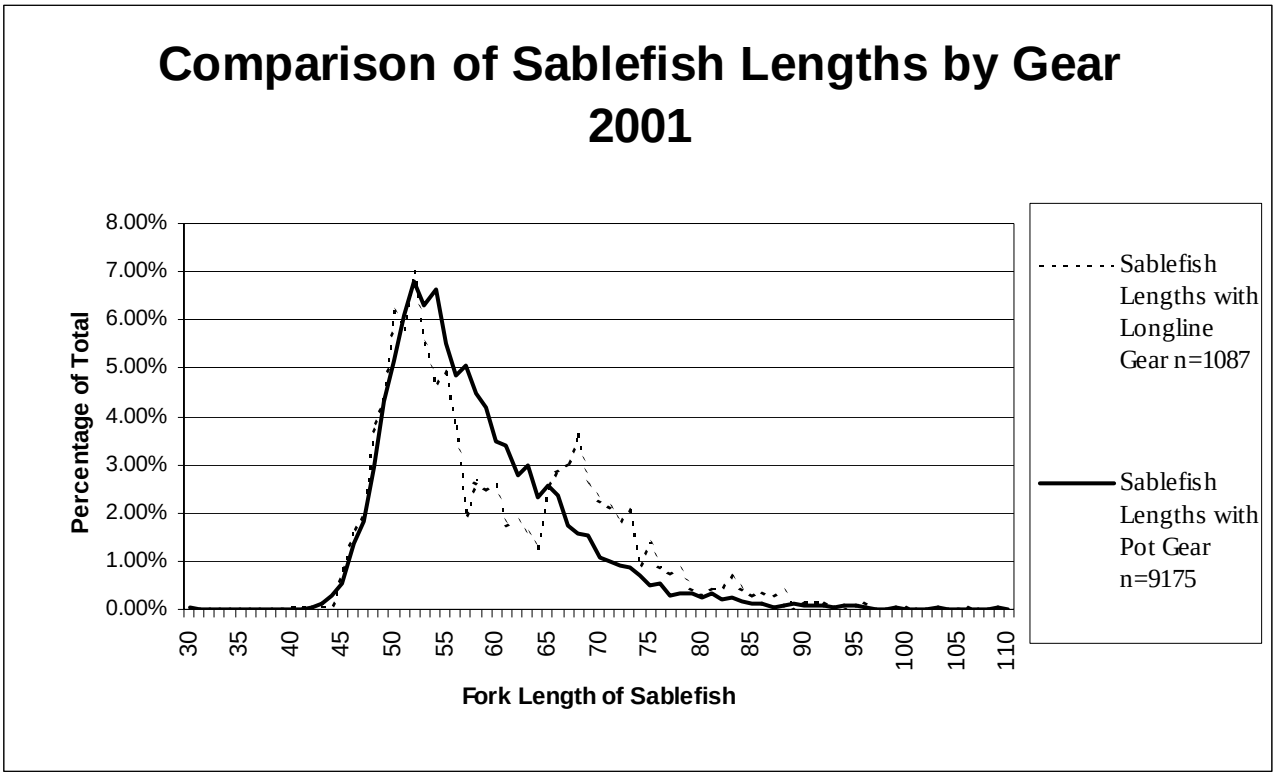



Figure 12. Comparison of lengths of sablefish caught in survey pots in late June through early July 2001 with the lengths of sablefish caught with survey longline gear in late June 2001 in Chatham Strait.